

## **REMARKS**

By this amendment, claims 1 and 8 have been amended. No claims have been canceled. Hence, claims 1-28 are pending in the Application.

## **SUMMARY OF REJECTIONS/OBJECTIONS**

Claim 1 is rejected under 35 USC 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. The preamble of claim 1 recites a method for managing a materialized view while the steps allegedly do not, i.e., claim 1 recites steps that only create a materialized view. Claim 1 has been amended to address the alleged basis for the rejection.

Claims 1 - 5 and 10 - 19 and 24 - 28 are rejected under 35 U.S.C. 103(a) as being unpatentable over Harumi A. Kuno and Elke A Rundersteiner, "Using Object-Oriented Principles to Optimize Update Propagation to Materialized Views", herein Harumi, in view of U.S. Patent No. 5,991,754, herein Raitto.

Claims 6 - 9 and 20 - 23 are rejected under 35 U.S.C. 103(a) as being unpatentable over Harumi in view Raitto, and in further view of U.S. Patent No. 6,272,502, referred to in the Office Action as Lieuwen.

### **Claim 1**

Claim 1 as amended, recites:

a "database management system creating" "a materialized view that contains  
objects of an object class";  
"wherein said object class defines attributes";

"wherein the step of creating said materialized view includes creating a container table that includes corresponding columns that correspond to said attributes and that hold the values of said attributes."

To establish a *prima facie* case of obviousness, three basic criteria must be met. First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings. Second, there must be a reasonable expectation of success. Finally, the prior art reference (or references when combined) must teach or suggest all the claim limitations. MPEP 2143

In the present application, there is no suggestion or motivation to modify the references. In fact, there is teaching and motivation against modifying the references.

The Office Action in effect admits Haruma does not teach creating a materialized, where creating the materialized view includes creating a container table that includes corresponding columns that correspond to attributes and that hold values for those attributes. The Office Action states, however, that Raitto teaches this step. Thus, in rejecting claim 1 for obviousness based on Haruma in view of Raitto, the Office Action is modifying Haruma to include creating a materialized view, where creating the materialized view includes creating a container table that includes corresponding columns that correspond to attributes and that hold values for those attributes. There is no suggestion or motivation to modify the reference in this way.

The MPEP states, "[i]f the proposed modification or combination of the prior art would change the principle of operation of the prior art invention being modified, then the teachings of the references are not sufficient to render the claims *prima facie* obvious. MPEP §2143.01 citing *In re Ratti*, 270 F.2d 810, 123 USPQ 349 (CCPA 1959).

A fundamental principle of operation of Harumi is that the objects and object attribute values of a materialized view are not replicated and stored in a data structure separate from the objects. Rather, only references to the objects are stored!

We define a materialized virtual class as a virtual class that caches its extent rather than computing it upon access. **We do not replicate objects that belong to materialized virtual classes, but instead store references to them.** We refer to this feature as **membership materialization**. As it depends upon oid support, membership materialization is unique to the object-oriented model. This feature reduces the storage overhead of materialization as well as the time and effort required for view update propagation (**demonstrated in Sections 4 and 5**). (emphasis added)

Harumi further teaches that this principle, referred to as membership materialization, which involves storing only references to objects and not the attribute values, is fundamental to reducing storage overhead and time and effort for updating a view. Harumi expressly dedicates a large portion of itself, i.e. sections 4 and 5, to demonstrating that the principle achieves these benefits. Even the title of Harumi expressly recites the notion of optimizing update propagation to materialized views. Thus, the feature of creating a separate data structure for a materialized view and using it to store values for attributes of the objects rather than just store references to the objects is a feature that violates a principle of operation of Harumi – one that is fundamental to achieving the very benefits for which Harumi was entitled.

Because the modification proposed by the Office Action violates a principle of operation of claim 1, there is no suggestion or motivation to modify as proposed by the Office Action. In fact, there is clear teaching and motivation against modifying the references in this way. Reconsideration and allowance of claim 1 is requested.

#### **Claim 10**

Claim 10 requires "wherein said materialized view includes an object column that has a plurality of nested tables that contain nested table objects."

The Office Action alleges that Harumi teaches this limitation. The Office Action relies on several passages for teaching this limitation.

The first passage cited is page 311, section 3, paragraph 2. It is a general description of the relation of classes and objects. The passage states that a class has a name, type and set membership. The passage states that object instances of a class share the same type i.e. properties and functions. The fact that a class has a name, type and set membership and that object instances of the class share the type does not suggest in any way much less teach about nested table objects in nested tables that are in an object column.

The other passage cited is section 3, paragraph 3. This paragraph is a general description of how a subclass has and inherits all the properties of a supertype. This fact does not suggest in any way much less teach about nested table objects in nested tables that are in an object column.

### **Claim 12**

a base table ... includes a base column typed as an object reference; and  
wherein the step of creating said materialized view includes creating a particular  
column of said container table that:  
corresponds to said base column, and  
is typed as an object reference.

Claim 12 thus requires creating a column in a container table typed as an object reference. The Office cites Harumi as disclosing this feature. However, the Office Action fails to specify with any modicum of specificity what in Harumi describes or correlates to a column typed as an object reference. Instead, the Office Action cites a large portion of the Harumi.

In an Office Action “the particular part relied on must be designated as nearly as practicable ... The pertinence of each reference, if not apparent, must be clearly explained ...” (37 C.F.R. § 1.104; MPEP 707). As shown above, the pertinence of the excerpts are not apparent and are not clearly explained. Instead, large portions of the references are simply identified in a non-specific way. The failure to specify any item or action is tantamount to admitting that Harumi fails to describe what the Office Action alleges it to describe. Surely, if Harumi taught about a column typed as an object reference the Office Action would have more specifically identified a passage or particular item.

#### **Remaining Pending Claims**

The pending claims not discussed so far are dependant claims that depend on an independent claim that is discussed above. Because each of the dependant claims include the limitations of claims upon which they depend, the dependant claims are patentable for at least those reasons the claims upon which the dependant claims depend are patentable. Removal of the rejections with respect to the dependant claims and allowance of the dependant claims is respectfully requested. In addition, the dependent claims introduce additional limitations that independently render them patentable. Due to the fundamental difference already identified, a separate discussion of those limitations is not included at this time.

For the reasons set forth above, Applicant respectfully submits that all pending claims are patentable over the art of record, including the art cited but not applied. Accordingly, allowance of all claims is hereby respectfully solicited.

The Examiner is respectfully requested to contact the undersigned by telephone if it is believed that such contact would further the examination of the present application.

Respectfully submitted,

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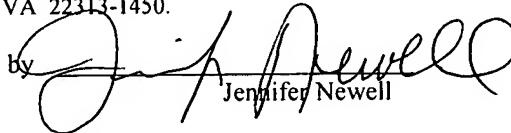
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by

  
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